

K/A SUPPRESSION

Issue:

In order to maintain examination integrity, Section D.1 of ES-401 (Revision 8, Supplement 1, of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors") requires examination authors to develop the examination outline using a systematic and random process to select specific knowledge and ability (K/A) statements from the applicable NRC K/A Catalog (NUREG-1122 [or 1123], "Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Pressurized [or Boiling] Water Reactors"). Because the NRC's K/A Catalogs are based on generic job/task analyses and not all facilities are the same, Section D.1.b discusses two methods that the examination author can use to eliminate inappropriate K/As (e.g., those having an importance rating that is below 2.5, those that clearly do not apply to the subject facility, and generic K/A statements for which it would not be possible to develop a Tier 1 (i.e., emergency and abnormal plant evolutions) or Tier 2 (i.e., plant systems) question).

The first method allows the examination author to eliminate inappropriate K/A statements concurrent with the outline development process but requires the author to briefly document, and the NRC to evaluate, the basis for rejecting every randomly selected K/A. This is a resource burden to facility licensees and the NRC, and the task has to be repeated during every examination, which is inefficient and could lead to inconsistency. An alternative method for eliminating inappropriate K/As involves a one-time screening of the entire K/A Catalog by the facility licensee, with a one-time NRC review of the basis for eliminating every K/A statement. Although this method is even more laborious than the exam-by-exam K/A elimination method, it should never have to be repeated and may result in a resource savings over time (although periodic adjustments may be required based on changes in plant equipment and procedures). However, the fact that the pre-screening method confers a degree of permanence makes it more important that facility licensees and NRC examiners employ consistent processes and rationales to ensure that only those K/A statements that are clearly inappropriate are excluded from the random selection process.

Recent experience in reviewing the bases for eliminating inappropriate K/As suggests that additional guidance may be necessary to reduce the resource burden and maintain an acceptable level of consistency, particularly with respect to the elimination of generic K/A statements. The NRC has found that some facility licensees have eliminated or suppressed thousands of generic K/As and generated justification documents that are hundreds of pages long. Meanwhile, other facility licensees have provided a small list of those K/As that were rejected and replaced after the initial K/A selection but failed to identify those K/As that were eliminated from the computerized program before the random selections were made.

Background:

When NUREG-1122 [and 1123], "Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Pressurized [Boiling] Water Reactors," were issued in the mid-1980s, each of the plant systems in Section 3 of the Catalogs had an associated list of 15 system-generic K/As, and each of the emergency and abnormal plant evolutions (E/APEs) in Section 4 of the Catalog had a

largely redundant list of 12 E/APE-generic K/As. In accordance with the guidance in NUREG/BR-0122, "Examiners' Handbook for Developing Operator Licensing Written Examinations," examiners were to distribute the questions for Tier 1 (E/APEs) and Tier 2 (Plant Systems) of the written examination among the six (K1-K3, A1-A2, and generic) and eleven (K1-K6, A1-A4, and generic) K/A categories in each of those tiers, respectively. The questions for Tier 3 (Generic Knowledge and Abilities) of the examination were to be linked to the 17 knowledge-based and 16 ability-based statements in Section 2 of the K/A Catalogs.

When NUREGs-1122 and 1123 were revised in the late-1990s, it was thought that many of the system-generic and E/APE-generic K/As had plant-wide as well as local applicability. Moreover, the original plant-wide generic section had relatively few K/As to draw upon to make up the 13% and 17% of the RO and SRO exams, respectively, as required by NUREG/BR-0122. Therefore, all the generic K/As were merged into Section 2 of the K/A Catalogs, and the generic K/A lists were deleted from each system and E/APE in Sections 3 and 4 of the Catalogs. Page xiv of Revision 2 of NUREG-1122 and page xiii of NUREG-1123 provide a cross-reference from the old system-generic K/As to the new generic K/As in Section 2 of Catalogs.

When Revision 8 of NUREG-1021 was issued in 1999, it incorporated the guidance previously contained in NUREG/BR-0122 and officially implemented the revised K/A Catalogs. To accommodate the fact that the system-generic and E/APE-generic K/As had been eliminated from Sections 3 and 4 and merged into Section 2 of the K/A Catalogs, the guidance in Section D.1.b of ES-401 was revised to indicate that the topics for the generic K/A category in Tiers 1 and 2 (i.e., Column "G" on Forms ES-401-1 through ES-401-4) would be selected from Section 2 of the K/A Catalogs. It also indicated that only those topics that are relevant to the selected evolution or system shall be included in the sample for Tiers 1 and 2. However, because Revision 8, Supplement 1, requires examination authors to use a random process to select the K/As, and the majority of the 129 K/As in Section 2 of the Catalogs (e.g., knowledge of shift turnover practices) are not relevant to Tiers 1 and 2, the examination author is likely to get a number of false hits that have to be evaluated and explained for every acceptable K/A. This is clearly an unnecessary burden that can be mitigated with additional guidance.

Additional Guidance:

1. When preparing the outline for **Tier 1** (E/APEs) and **Tier 2** (Plant Systems), the examination author **shall not exclude from the random selection process** for Category "G" any of the following K/As from Section 2 of the applicable K/A Catalog: 2.1.2, 2.1.14, 2.1.23, 2.1.27, 2.1.28, 2.1.30, 2.1.32, 2.1.33, 2.2.22, 2.2.25, 2.4.4, 2.4.6, 2.4.30, 2.4.31, 2.4.49, and 2.4.50. However, these K/As **may be rejected and justified on a case-by-case basis** while developing the examination outline. The NRC will review the author's justification for each rejected K/A. The remaining Section 2 K/As **may be excluded** from the random selection process **and/or rejected without explanation** or justification.

[Note: With the exception of K/A #2.4.6, the listed K/As equate to the "Old System-Generic K/As" identified on page xiv of NUREG-1122 (Revision 2) and page xiii of NUREG-1123 (Revision 2). K/A #2.4.6 replaces old E/APE-generic K/A #12, "ability to utilize symptom-based procedures," which was omitted from Revision 2 of the Catalogs.]

2. **All*** of the K/As in Section 2 of the applicable NRC K/A Catalog shall remain eligible for random selection for **Tier 3** (Generic Knowledge and Abilities) of the outline for RO and SRO examinations. They **may not be pre-screened** out, however, they **may be rejected and justified on a case-by-case basis** while developing the examination outline. The NRC will review the author's justification for each rejected K/A. (* Single-unit facilities **may** pre-screen out multi-unit generic K/As 2.2.3 and 2.2.4.)

[Note: As stated in Section D.2.a of ES-401, the intent of Tier 3 questions is to evaluate the applicants' knowledge in areas applicable to generic plant operation and not a specific system or procedure. If one of the Old System Generic K/As is randomly selected for Tier 3, the question should avoid testing knowledge specific to a particular system or procedure but test a plant-wide generic concept.]

3. Examination authors and reviewers should ask themselves the following questions to help determine whether or not **any** K/A statement is appropriate for testing:
 - " Is the subject K/A relevant (e.g., is the system, component, process, procedure, or event installed, in use, or possible) at the subject facility?
 - " Is the subject K/A's importance rating equal to or greater than 2.5 for the license level of the proposed examination or is there a site-specific priority that justifies keeping the K/A if its importance rating is below 2.5?
 - " Is it possible to prepare a psychometrically sound question related to the subject K/A?

If these questions can **all** be answered in the affirmative, then the subject K/A is probably appropriate for testing. The fact that a K/A does not have a corresponding facility learning objective, was not covered in training, is not specifically cross-referenced to 10 CFR 55.41 or 55.43, or is subject to selection in multiple Tiers, are **not** sufficient bases for eliminating the K/A from any Tier of the outline.

4. Facility licensees that elect to pre-screen and eliminate **any** K/A statements from the random selection process should make arrangements for their NRC regional office to review their screening process and results before they submit their next examination outline. Any subsequent changes to the list of K/As from which the examination outline is generated would also have to be documented, justified, and reviewed by the NRC.
5. Except as noted in Item 1 above, **all** K/A statements that are eliminated after they have been randomly selected to fill an examination outline shall be documented on Form ES-401-10, "Record of Rejected K/As," or equivalent, and submitted to the NRC regional office for review in conjunction with the proposed examination outline.